

REMARKS

Favorable reconsideration, reexamination, and allowance of this patent application are respectfully requested in view of the following remarks.

Information Disclosure Statement (IDS)

Applicant acknowledges receipt, with the Office Action, of copies of the partially-examiner-initialed form 1449s that Applicant filed with an IDS dated 12 July 2006. Applicant notes with dismay, however, that several of the documents on the form 1449s were lined through, and that the pages were annotated with the clause, “ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH”. Applicant respectfully full consideration of the documents cited in the July 12th IDS and return to Applicant of copies of the form 1449s indicating that all of the documents have been considered.

The July 12th IDS cited nine U.S. patents, eight foreign patent documents, and three non-patent literature documents, namely three search reports issued in corresponding foreign patent applications. Other than the annotation quoted above, the Office Action gives no explanation for having not considered the documents the citations of which were lined through. Applicant has reviewed the Image File Wrapper for this application, and has confirmed that copies of all of the non-U.S. patent documents were of record in this application as of the mailing date of the Office Action; copies of the U.S. patent documents are not required. *See* 37 C.F.R. § 1.98(a)(2).

Applicant notes that all of the non-U.S. patent documents that were lined through were cited in one of the Search Reports issued in corresponding foreign applications, and their alleged relevancies were characterized by one of the English-language letters “X” or “Y” (one of the Japanese documents was erroneously cited twice, while the published PCT application is the publication of the parent of this application). Thus, a concise statement of the relevance of each of the documents has been given, as required by 37 C.F.R. § 1.98(3). M.P.E.P. §§ 609.03, 609.04(a)(III), Concise Explanation Of Relevance For Non-English Language Information (“Where the information listed is not in the English language, but was cited in a search report or

other action by a foreign patent office in a counterpart foreign application, the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office.

This may be an explanation of which portion of the reference is particularly relevant, to which claims it applies, or merely an "X", "Y", or "A" indication on a search report.")

(emphasis added). Furthermore, patent examiners are not at liberty to not consider documents the citations of which comply with 37 C.F.R. §§ 1.97, 1.98; the rules are plainly compulsory ("An information disclosure statement **shall** be considered by the Office if filed by the applicant within any one of the following time periods"; 37 C.F.R. § 1.97(b); emphasis added).

For at least the foregoing reasons, Applicant respectfully submits that the July 12th IDS fully complied with 37 C.F.R. §§ 1.97, 1.98, and therefore respectfully requests consideration of all of the documents cited therein, and return to Applicant of a copy of the fully-Examiner-initialed PTO-1449.

Rejection under 35 U.S.C. § 103(a)

In the Office Action, beginning at page 2, Claims 1, 2, and 5-11 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the prior art; Claims 3 and 4 had previously been cancelled. More specifically, beginning at page 3, Claims 1 and 6 were rejected under 35 U.S.C. § 103(a) as reciting subject matters that are allegedly obvious, and therefore allegedly unpatentable, over U.S. Patent No. 4,507,264, issued to Stern, in view of U.S. Patent Application Pub. No. 2005/0064220, invented by Hasz, for the reasons presented at pages 3-4. Beginning at page 4, Claims 2 and 5 were rejected under 35 U.S.C. § 103(a) as reciting subject matters that are allegedly obvious, and therefore allegedly unpatentable, over *Stern* and *Hasz* in view of U.S. Patent No. 6,968,991, issued to Renteria *et al.* ("Renteria"), for the reasons presented at page 4. Beginning at page 5, Claims 7, 8, and 11 were rejected under 35 U.S.C. § 103(a) as reciting subject matters that are allegedly obvious, and therefore allegedly unpatentable, over *Stern* and *Hasz* in view of U.S. Patent No. 5,806,751, issued to Schaefer *et al.* ("Schaefer"), for the reasons

presented at pages 5-6. Beginning at page 6, Claim 9 was rejected under 35 U.S.C. § 103(a) as reciting subject matter that is allegedly obvious, and therefore allegedly unpatentable, over *Stern*, *Hasz*, and *Schaefer* in view of U.S. Patent No. 6,575,349, issued to Van Esch and U.S. Patent No. 6,612,470, issued to Rafferty, for the reasons presented at page 6. Beginning at page 6, Claim 10 was lastly rejected under 35 U.S.C. § 103(a) as reciting subject matter that is allegedly obvious, and therefore allegedly unpatentable, over *Stern* and *Hasz* in view of U.S. Patent No. 5,344,717, issued to Dutton *et al.* (“Dutton”) and U.S. Patent No. 5,340,015, issued to Hira *et al.* (“Hira”), for the reasons presented at pages 6-7.

Applicant respectfully requests reconsideration of these rejections.

This application describes processes and compositions embodying principles of the present invention.

Claim 1 relates to a braze alloy consisting of, in wt.-%: 10-15% Cr, 4.5-6% Al, 0.17-0.3% Y, 8-12% Co, 0-4% W, 2.5-5% Ta, 2.0-3.5% B, with $\text{Cr} + \text{Al} > 15\%$, $\text{Cr}/\text{Al} \leq 3$, and $\text{Al} + \text{Ta} > 7.5\%$, remainder Nickel and impurities. In this regard, Applicant notes that the claim is closed as to the contents of the alloy, using the transition phrase “consisting of”.

The prior art, including *Stern*, *Hasz*, *Renteria*, *Schaefer*, *Van Esch*, *Rafferty*, *Dutton*, and *Hira*, fails to disclose, describe, or fairly suggest the combination of features recited in the pending claims.

Applicant strongly disagrees with the negative patentability characterizations expressed in the Office Action. *Stern* describes a brazing alloy which is different from the alloy recited in the combination of Claim 1 not only in the fact - mentioned in the Office Action - that W and Co were not included in that alloy. *Stern* also discloses a different Y content of that alloy ($Y = 0.01$ to 0.06 wt%, preferably 0.01 to 0.03 wt%); see *Stern*, column 2, line 12 and lines 37-38. *Stern* describes that Yttrium (in the disclosed low range) enhances the high temperature capabilities of the brazing alloy (see column 4, lines 31-32). The examples disclosed by *Stern* show Y contents of only 0.015 , 0.02 , 0.025 , and 0.018 wt% (see column 5, Table), which are about one order of magnitude lower than the Y content of the claimed alloy (0.17 - 0.3 wt%). This is a significant difference, particularly with respect to the other known state of the art (see the present

application, at page 4, 2nd paragraph), because more than 0.16 wt% Y in Ni based alloys were considered as being not good for improving oxidation resistance, but instead enhancing undesirable characteristics (precipitation of yttride phases and changes in the melting properties). It was an unexpected effect (see page 8, last 3 lines in this application) that, with the claimed high Y content in the claimed brazing alloy, such an enhanced high temperature oxidation resistance could be reached. Furthermore, the yttrium content is balanced with the Cr/Al ratio of the alloy. Applicant's claims recite a Cr/Al ratio of a maximum of 3, and the Y content is an adaptation to the specific claimed composition. The yttrium content in the claimed braze alloy is higher compared to standard braze alloys (and to standard MCrAlY coatings) because the yttrium content is balanced with the Cr/Al ratio of said braze alloy.

Hasz describes oxidation-resistant coatings bonded to the substrate by a bonding agent, such as a braze material (see Abstract or Claims 1 and 3), which means that the bonding agent is the braze material, not the coating. *Hasz* discloses that the braze material comprises at least one metal selected from the group consisting of Ni, Co, Fe, a precious metal, and a mixture which includes at least one of the foregoing (see Claim 14). *Hasz* also discloses a braze material of NiCrSi braze powder with 10 wt% Si, 10 wt% Cr and the base nickel as an example (see *Hasz*, page 5, right column, lines 2-4), which has nothing whatsoever to do with the present invention. The braze alloy according to Claim 1 of this application has a completely different chemical composition.

Assuming, *arguendo*, that the coating alloys of *Hasz* could be used as braze alloys (which is not at all described by *Hasz*, contrary to the statement in the Office Action), a hypothetical combination of *Stern* and *Hasz* would not lead to the claimed braze alloy composition. Neither *Stern* nor *Hasz* disclosed, describes, or suggests:

- incorporating W into the chemical composition;
- limiting the Cr/Al ratio to a maximum of 3;
- adaptation of the yttrium content to that Cr/Al ratio; or
- the claimed specific ranges of the elements in the chemical composition.

The Office Action appears to acknowledge the shortcomings of the prior art documents'

disclosures, yet attempts to make up for the prior arts deficiencies by alleging that,

although the weight percentage amounts disclosed in STERN and HASZ are not identical to those claimed, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

The Office Action plainly quotes from M.P.E.P. § 2144.05(II), which states in its entirety:

II. OPTIMIZATION OF RANGES

A. Optimization Within Prior Art Conditions or Through Routine Experimentation

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

B. Only Result-Effective Variables Can Be Optimized

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re*

Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

The M.P.E.P. thus clearly instructs the examining corps that the mere similarity between a claimed range and that disclosed in the prior art is not sufficient to support a *prima facie* case of obviousness. The patent examiner must point to technical facts that demonstrate that the prior art evinced knowledge that the particular constituent is a 'result-effective variable', one that the ordinarily skilled artisan would thus be motivated to 'optimize.' The Office Action does not point to such evidence for a simple reason: there is none in the prior art. Thus, the Office Action clearly fails to make out a *prima facie* case of obviousness.

The tertiary disclosures of *Renteria*, *Schaefer*, *Van Esch*, *Rafferty*, *Dutton*, and *Hira* fail to cure the fundamental deficiencies of *Stern* and *Hasz* with respect to the combinations of the pending claims, and therefore their hypothetical combination still would not render the claims unpatentable.

For at least the foregoing reasons, Applicant respectfully submits that the subject matters of Claims 1, 2, and 5-11, each claim taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

Conclusion

Applicant respectfully submits that this patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Mr. Mekhlin believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, he is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. If, however, additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is hereby authorized to charge fees necessitated by this paper, and to credit all refunds and overpayments, to our Deposit Account 50-2821.

Respectfully submitted,

By: /Adam J. Cermak/
Adam J. Cermak
Registration No. 40,391

U.S. P.T.O. Customer Number 36844
Cermak Kenealy Vaidya & Nakajima LLP
515 E. Braddock Rd.
Alexandria, Virginia 22314

703.778.6609 (v)
703.652.5101 (f)

Date: 15 April 2009